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ABSTRACT

Traditionally, in the intersection of technology and education, two distinct cultures have existed side by side: the "techies"--technologically sophisticated or enthusiastic experts, and the teachers--elementary through higher education. In an effort to bring the two separated cultures together to engineer a new culture and to support technology integration at a large teacher preparation institution, a group of nine graduate students were recruited to serve as Techguides. One of the primary responsibilities of the Techguides was to partner with teacher educators to help them integrate technology in their courses for preservice teachers. This paper reports on the preliminary results of this effort by looking at the development trajectory of four Techguides over a course of 3 months. Two themes that surface are the role of the room (i.e., the physical space in which the project was housed) in the development of the Techguide culture and the impact of this culture's interaction with the broader teacher education culture of the college. As the stories presented suggest, the four Techguides, with quite different backgrounds in technology and teaching, were able to interact with each other to construct a shared culture of teaching and learning with technology. (AEF)

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Life on the Margins: Stories of Techguides

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Traditionally in the intersection of technology and education, two distinct cultures have existed side by side. There have been the "techies"—the technologically sophisticated or enthusiastic experts on one hand, and the teachers—elementary through higher education—on the other. The two groups have tended not to see each other as resources and collaborators but rather as opponents, competing for the same available resources. The techies are inclined to favor as much technology as possible, as soon as possible, for all possible uses. The teachers, although committed in general to the importance of students learning technology, are inclined to feel that within their own realm of operation they are doing just fine, thank you, and really don't need another expensive, time-consuming task added to their already heavy loads. The two groups have also quite negative perceptions of each other. While the "techies" perceive the teachers as "resistant to change", the teachers see the techies as nerds who do not really understand teaching and learning. The two groups attend different conferences, read different journals, and participate in different professional communities.

Neither one of these two cultures is sufficient for successful technology integration, which requires both deep understanding of and caring about teaching and learning AND sophisticated knowledge of and skills in modern technologies. What we need is a third culture. Members of this new culture are marginal members of the other two cultures. In other words, they are techies who deeply appreciate the culture of the teachers or teachers who are thoughtful and enthusiastic technology users. Traditionally, this third group has developed as a result of accidental events occurring to individual members. Many technology-using teachers, for example, take on technology because of an unplanned event. Likewise, many technology people who become really interested in teaching and learning do so because a circumstance of their lives necessitates interaction with teachers and students. This paper describes a deliberate effort to bring the two traditionally separated cultures together to engineer a new culture.

To support technology integration at a large teacher preparation institution, a group of nine graduate students were recruited to serve as "Techguides." One of the primary responsibilities of each techguide is to partner with teacher educators to help them integrate technology in their courses for preservice teachers. These Techguides are pioneers in what we call the "third group." We have deliberately recruited students with diverse backgrounds in technology and teaching and have tried to create a physical environment which is conducive to interactions between "techies" and "teachers". In short, we are trying to foster a culture that enables the two groups to interact with each other, challenge each other, and learn from each other in an explicit fashion.

This paper reports on the preliminary result of such an effort by looking at the developmental trajectory of four Techguides over a course of three months, by attending to the ways in which the physical space in which this project is housed provides a middle ground for the two disparate groups to interact in and impact the development of a new culture for teaching and learning with technology. Two of the Techguides are the stereotypical "techies." Both are male in their 40's with a strong technological background. Both are doctoral students in the Educational Technology program. One of them had been a computer consultant and owner of a computer store. The other works as an engineer at a local broadcast service. The other two Techguides are female with a teaching background in literacy and language arts. They are both doctoral students in the Teacher Education program. They had little knowledge of technology. Two of the themes that surface in the following informal stories are role of the room in the development of the Techguide culture and the impact of this culture's interaction with the broader Teacher Education culture of the College.

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Stories of the Techguides

Andrew Topper, Ph.D. student, Educational Psychology

I had started my fourth year in the Ph.D. program when I was asked by Dr. Zhao to coordinate and lead the Techguides. I worked closely with Dr. Zhao as he developed the ideas that became what I call "the shop", part of a new approach to supporting technology adoption in the MSU college of education. My own background is in computer science, with over thirteen years of experience as a software engineer, so I bring substantial technology experience to my work as a techguide.

I was one of the first people to occupy the room, working with a few other Techguides as we moved the desks and chairs into place and installed all the computer equipment. I feel a sense of belonging there and feel strongly that the room is a powerful and productive environment for learning about all aspects of educational technology. While I bring a wealth of technical expertise to this learning community, I am deeply interested in learning how technology shapes and is shaped by the practices of ordinary teachers. I enjoy working with TE instructors, as well as with students in the college, who bring teaching experiences I don't have to my attention and help me understand the complexities of classroom life and the challenges of using technology in pedagogically appropriate ways.

I think the thing that strikes me most about the ethos of the room is the way it supports a spectrum of social and intellectual activities. At various times during a single day, you might observe or participate in conversations about how to install specific software or hardware, work collaboratively to locate specific educational resources on the Web, discuss papers and presentations for conferences or journals, have philosophical or epistemological conversations about teaching, learning, and knowing, and engage in humorous story telling about personal experiences with technology. I believe the power of the room is in its' ability to support all these, and various other, forms of stimulating intellectual conversations that provide students and faculty alike with numerous opportunities to engage in meaning making around, with, and through technology. At its core, the shop is a social context for thinking, talking, working, and experimenting with various forms of educational technology that is supportive but challenging, critical but friendly, and at all times helpful to those who assemble there. One measure of how successful the room has been in cultivating an environment for educational technology research are number of people who inhabit it at all hours of the day or night.

The learning community that meets regularly in formal and informal ways in The Shop includes Techguides, TE instructors, classroom teachers, faculty members, undergraduate and graduate students. The learning that occurs in The Shop is at times intentional, and at other times incidental. We hold classes and workshops; we have social gatherings; we work collaboratively with teachers. Perhaps most importantly, we engage in a variety of ongoing scholarly activities that focus on the intersection of technology and teaching in The Shop.

I am thankful for the opportunities I have had to learn, laugh, talk, share, and know in The Shop and I hope to continue being an active member of The Shop as a techguide in the future. I am also interested in knowing more about why The Shop has been so successful as a learning community and what we might do to support similar efforts in other settings.

Andy's story highlights ways in which the environment of Room 130 is a supportive and challenging environment for a "techie." It also illustrates the way the room provides Andy with interactions with teachers and teacher educators which most likely would not be available to him without a place like this. But although the vigorous and varied ways that the room is used provides evidence that it supports a vital culture, it is not clear the extent to which that culture is indeed a newly developing culture combining the two groups introduced earlier—the techies and the teachers.

Rick Banghart, Ph.D. student, Educational Psychology

I call it "the room." (In an early meeting we decided that it was "The Shop" but the name hasn't stuck for me.) The room is the focus of activity for the Techguides. Although I'm not an official techguide (i.e., I don't hold a paid position), I feel like I'm part of the room. Becoming part of this group of people was my explicit goal at the beginning of the semester, and I feel that I have met my goal. I had been pursuing my Ph.D. in Educational Psychology for three years while working full time as an engineer at the University's public television station. For the first three years I enjoyed my classes and my colleagues, but I found that I was unable to find a place for myself as a scholar. Dropping in for classes and returning to work and home resulted in my lacking any sense of connection with the broader college community. The room has provided me a place in which to become a member of a community of scholars.

I think of the room as an ideal facility for a number of reasons. It is a six-minute walk from my office at the television facility, through a beautiful campus. The room has a high ceiling and windows on the east and west walls that extend from the ceiling to near the floor with views of trees and sky. The result is a large, airy space filled with natural light. The furniture consists of about a dozen desks with open shelving units on them. The technology in the room is very current. We are connected to a dual Pentium Pro NT Server with SQL Server and Internet Information Server. The workstations consist of a half-dozen Macintosh 7300s and five Pentium machines running Win 95. The college has made a commitment to providing software as needed. From

my perspective, these factors combine with the people with whom I am privileged to work to create a work environment that is ideal.

I see that Andy mentioned the ethos of the room. The word "ethos" had not entered our discussion of the environment until we started work on this paper, but its introduction to the discourse is appropriate. Unlike the typical graduate student cubicles, we work in a very open space. We intentionally make the room inviting to passers by. We regularly seek help from one another in all matters from the phrasing of a sentence, to the proper HTML tag syntax. The ethos that has evolved encourages us to be open with our knowledge and with our lack of knowledge.

My involvement in the room as a techguide has affected me in a number of ways. I might say that I've experienced an epistemological epiphany. I entered my Ph.D. program after being out of the academic field for nearly 20 years. When I was last learning about education, Piaget was just being integrated into the curriculum. Over the last three years I've been introduced to a wide range of ideas: post-modernist, socio-cultural, cultural-historical, Vygotsky, constructivism, constructionism, and evolutionary epistemology. Reading about such things brought about an intellectual understanding of these ideas, but the room is a place where all of these ideas can be experienced. Through the combination of learning the very technical processes of creating interactive Web-based learning environments, and helping others learn such technical skills, I've come to have a much deeper understanding of how knowledge is acquired and what knowledge is.

Early in the semester I embarked on a Web development project. My goal was to create a Web-based application that would allow students to store and graphically display data in support of a high-school physics class. Although I had some programming background, this project required the use of a number of technologies I had no experience with. As I began, I sought information and assistance from my colleagues, as well as from technical experts employed by the College. I quickly learned that the information I got in answer to my questions was very often wrong. At the same time, others regularly consulted me for technical assistance. I became acutely aware that I needed to be as skeptical about the "knowledge" I was giving others as I was about the knowledge I received from others. In a field where what was true yesterday is not true today, knowledge claims have to be qualified.

It is clear from Rick's story that the kinds of learning about technology afforded by the culture of this room are at least potentially transformative. In addition to the learning which Andy mentions as coming from interactions with teachers and teacher educators who bring a completely new set of perspectives, understandings and skills, the kinds of interactions among the residents of the room in themselves contribute to reflections about teaching and learning with technology.

This space seems to have great creative potential but it also erects barriers. Rick's statement that the Techguides have made a deliberate attempt to make the room welcoming to passersby indicates that the room is clearly techguide territory. Although the Techguides have attempted to make it a public space there are clear constraints to this. Although it may be a space that is comfortable under certain circumstances to non-techies, and although it may be used by a wide range of people for a wide range of purposes connecting technology to education, in fact it is not a public space. The room is locked for security purposes whenever a techguide is not present and individuals working in the room must be consciously identified as either insiders or outsiders in order to maintain the security of the room.

Kaijun Hou: Ph.D. student, Teacher Education

As a student of teacher education majoring in language teaching, I started my role as a techguide without much computer technology knowledge, but with strong interests and longing to learn about technology applications in language teaching and learning. I saw the promise of technology as making teaching and learning more creative, effective, efficient. But it was a big challenge for me.

Challenge #1: Entering the room: I entered the room as an outsider. I mean that the room was already occupied by some tech experts. I was hesitant to use some of the computers that they owned. Whenever I needed to use some computer, I would ask for permission. But, the answers I got made me feel welcome; I could use any computer if it was available. This made me feel that I was part of them. But being part of the Techguides was not only that I could use the computers in the room, there was something else.

Challenge #2: Entering the conversation: Just being in the room didn't make me part of the Techguides, even though I thought I was. I felt that they were standing on the mountain talking to me and that I couldn't hear clearly what they were saying. I had to make the effort in order to hear and understand what they were talking. Therefore, I stayed in the room more often and tried to join their conversations. I figured out that I came from a different discourse group. In order to be familiar with the discourse in the room, I needed to become familiar with the language and the knowledge base that they all used in the conversation. The conversations that I had with other experienced Techguides provided opportunities to construct knowledge together. Our talk ranged from basic software use to higher level discussions about technology and pedagogy, virtual communities, learning communities, technology and schools, and what teachers need with educational technologies. Like Andy, I am deeply interested in learning how technology shapes and is shaped by the practices of ordinary teachers.

It seems there were three stages to the process of becoming an insider:

1. Beginning techguide (a language teacher): During this period as a techguide, my conversations with other experienced Techguides was very basic, such as " How

can I find ...?" " How can I open...?" " What is ...?" At this moment, technology to me was still thought of as a tool. If I knew how to use the tool, that would be enough for me.

2. Intermediate techguide (a language teacher): During this period as a techguide, I grew a lot. I could join the conversation and begin to ask some more in depth questions, such as " How could I make it work this way?" " What could I do that I can make it better?" " Is there any other way to represent this idea?" " What are the possible ways that I could do to reach what I want?" Now, I could make connections with what I knew and what I would like to have happened in my work as a techguide.
3. Experienced techguide (a language teacher): Now, I could discuss with other Techguides how we could combine technology with teaching and learning. I worked with some TE instructors and interns. I could offer ideas on how and what technology could do in teaching and learning. These ongoing conversations stimulated my thinking about technology applications in education, broadening my knowledge base of educational technology.

The room and the conversation: Being in this room and being part of the conversation is challenging, exciting and stimulating. There is always something new evolving in this environment. Incidental and mediated learning always happens in here. I enjoy this community and the dialogue with all the people. It's really a learning environment. It's challenging in a sense that the new knowledge occurs any time and knowing the new knowledge is exciting and stimulating. This social matrix weaves diverse cultural backgrounds and knowledge together. This reminds me of Burbules' " Dialogue in Teaching." He believes that: "Dialogue is an activity directed toward discovery and new understanding, which stands to improve the knowledge, insight, or sensitivity of its participants. The pursuit of mutual understanding or agreement on some matter of common concern, therefore, does not necessarily threaten, and is not threatened by, difference. The key criterion to be applied here is whether understanding or agreement is achieved in ways that allow participants a full range of opportunities to question, challenge or demur from each other's view"(p.8).

Kaijun has experienced many of the same kinds of learning experiences from her participation in this environment as described by Andy and Rick, but in addition she suggests that there is a substantial insider-outsider issue even among the permanent inhabitants of the room, primarily based on technological expertise. This is an important issue, since previous descriptions of the techguides as "we" suggest a homogeneous solidarity which Kaijun's story breaks down. If insider/outsider groups exist even among the Techguides themselves it is interesting to wonder how this might facilitate or impede the new culture which the program is designed to engineer. Examining how those insider/outsider distinctions are broken down may provide insights into ways to help break down barriers that make teachers and teacher educators perceive themselves to be outsiders to a technology culture. Three important features emerge in Kaijun's journey from outsider to insider. First is her determination. She set herself a challenge to overcome the barriers to full participation in this culture. Second is Kaijun's identification of those barriers as her lack of technology skills and her lack of a common language for discourse with this group. So she set herself the task of learning the skills and the language. The third feature is the time and the authentic tasks that made it possible for her to function as a member of the culture. She had the time available to her to immerse herself in this culture, and she had work to do in common with the other members of the culture. It is difficult to imagine how she might have made the transition with any one of those pieces missing.

Sheri Rop, Ph.D. student, Teacher Education

I became a techguide this fall with very little technology experience. I was interested in the ways that technology could be thoughtfully used in classroom teaching, but e-mail and word processing were the extent of my experience. Like Kaijun, I experienced severe cultural discongruity, primarily focused on the room itself and the language of technology. I find this discussion interesting because I feel that issues of the constraints and affordances of physical space and materials are an important part of helping people become comfortable, competent, and thoughtful users of technology. I was happy to know that officially I "belonged" to Room 130 but I was definitely an outsider. As we began to set up the room, I noticed that the six spots by the windows were immediately occupied by the "experts." It took quite a while for the rest of the room to "gel"—it wasn't immediately clear who all the grad students were who were assigned to the room and all the furniture didn't arrive immediately—so a number of us were sort of "floating." Like Kaijun, in spite of all the words to the contrary I did not feel comfortable using someone else's computer and I did not have one to call my own. I also noticed that no one else really worried about us: those who had claimed a space set to work and we were left to fend for ourselves. I think this was a very valuable, although uncomfortable, time. It forced me to decide how to establish myself among this group.

As I began my work as a techguide I, like Kaijun, was continually challenged. I had entered a foreign country. When I needed help—which was pretty consistently at first—I felt that the other Techguides were speaking a foreign language. Learning the basic computer skills that I needed in those first weeks was the most intellectually jarring experience I have had. I had to learn from scratch a new language and a new way of thinking. I thought I had known from the time I was two years old what the preposi-

tion "in" meant. But when Andy said to me "You have to open the document in Netscape", all of my previous understandings of that word were defeated; I had no way to process what this might mean. I had to find my way through uncharted territory. The computer not only spoke a foreign language but was also a tyrant; either I did things its way with perfect precision or we had no interaction at all. Hand signals and rough approximations of words, standby tools of communication in foreign countries, were powerless.

This whole experience has given me valuable insight into the way teachers must be feeling faced with the pressure to incorporate technology into long-established patterns of classroom interactions. If I got stuck, I knew someone in Room 130 would be able and willing to help me out. I knew the resources available in the room in terms of people and equipment. How much more difficult for those who did not have, or were not familiar with these resources. However, I also felt guilty that I was taking up a lot of people's time. I countered this in my mind with the reminder that Dr. Zhao had stressed that we were all here to help each other—(although from my perspective there were only a few who really needed much help and no one who needed as much as I). I also reminded myself that I was probably a good test case for these technology experts—if they could be patient enough to work with me, they would be well prepared to work with the TE instructors who would be coming to us.

During this semester, I have gained a great deal of knowledge and confidence, but I have not become part of the culture of the room to the extent that Kaijun has. A big part of the reason, I believe, is the limited amount of time I am able to spend in the room. Since I live an hour and a half from the university I am only able to be on campus two days a week. Time to just "hang around" working on projects in the room seems vital to real membership in the culture.

The stages I have experienced haven't occurred for me in quite the same way as they did for Kaijun. I feel that I have passed the beginning stage. I have some pretty good basic skills and I have successfully learned the language, at least to a workable degree. These accomplishments make it possible for me to participate in what Kaijun identifies as stage three—participation in discourse about the ways that technology and teaching and learning intersect. However, I have not reached the stage of facility with technology that she describes in stage two, nor have I reached a point where I am comfortable helping a teacher use technology in his or her classroom, although comfort no longer seems to me to be a necessary qualification to initiate such a relationship.

These stories provide valuable commentary on issues of culture around technology. Barriers are revealed to be more permeable than might appear. While Techguides might seem to all as "techies" to outsiders, in fact they possess widely varying degrees of expertise and comfort with the culture of technology. Sheri's story reinforces the inferences drawn from Kaijun's story that participation in a culture of technology in education involves four factors: 1)determination, 2) skill with technology and the language of technology, 3) authentic tasks to work on, and 4) time to get comfortable with the technology and those who use it. It is clear that the room can support this process for the Techguides, and that it can provide a place for Techguides to interact with teachers and teacher educator in effective ways. However, Kaijun's and Sheri's stories raise the possibility that the extent to which the room helps to create and support a culture of technologically proficient individuals, it may inhibit the creation of a marginal group in which teachers and teacher educators can participate as equals; it is possible that the two purposes of the room work at cross-purposes with each other.

Summary

As the stories suggest, the four Techguides, with quite different backgrounds in technology and teaching, were able to (sometimes forced to) interact with each other to construct a shared culture of teaching and learning with technology. While we have not achieved the goal of developing a third group yet, representatives of the two traditionally separate groups—techies and teachers—have been drawn closer through this interaction in about three months. It is our expectation that this interaction will continue and the Techguides will continue to develop this new culture.

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